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EXAMINER	
DANG, HUNG Q	

ART UNIT	PAPER NUMBER
2635	9

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/820,065	DUBINSKY ET AL.	
	Examiner	Art Unit	
	Hung Q Dang	2635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to applicant's amendment received on 12/31/2003. The amended abstract, the amended claims 1, 23 and 29-30 have been entered.

Response to Arguments

2. Applicant's arguments regarding claim 23 on 5th paragraph, page 9 of the response have been fully considered but they are not persuasive. Applicant argues that the US patent 4,314,365 does not teach or suggest an acoustic actuator or reaction mass **disposed within a wellbore.** However, such limitation is not even claimed in claim 23, therefore, applicant's argument regarding claim 23 is not persuasive.

Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments with respect to claims 10, 15-17, 19 and 20 on pages 10-11 of the response merely state the general aspects of the cited prior arts. The indicated arguments do not specifically direct to any indicated claim and , therefore, said arguments are not persuasive.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 23, 24, 28, 29 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Petersen et al. U.S. Patent 4,314,365.

Regarding claim 23, Petersen et al. teaches a method of transmitting from a first location within a well borehole to a second location comprising:

- conveying into the borehole on an elongated member having a longitudinal bore (Figure 4), a reaction mass (Figure 7, unit 232 and column 8 lines 8-26) and an acoustic actuator (Figure 7, unit 234), the reaction mass being movably disposed on the elongated member and operatively coupled to the acoustic actuator; and
- inducing a reciprocating movement in the reaction mass using the acoustic actuator where by the reciprocating movement causes an acoustic wave to transmit into the elongated member, the acoustic wave being indicative of the signal (column 8 lines 8-26).

Regarding claim 24, Petersen et al. also suggests a controller for controlling the apparatus (column 8 lines 26-38).

Regarding claim 28, Petersen et al. also teaches the apparatus claimed in claim 9, wherein the actuator (Figure 7, unit 234) is coupled to the reaction mass (Figure 7, unit 232) with a biasing element (figure 7, unit 238).

Regarding claim 29, Petersen et al. also teaches that the reciprocating movement is an oscillation at a predetermined frequency (column 10 lines 5-7).

Regarding claims 27 and 31, the actuator disclosed by Petersen et al. is also a fluid control device (column 8 lines 27-38).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen et al. U.S. Patent 4,314,365.

Regarding claim 30, even though Petersen et al. does not specifically teach that the reciprocating movement is an oscillation at a resonant frequency, however, one skilled in the art would recognize that wave oscillates best at resonant frequency. Therefore, it would have been obvious to provide reciprocating movement at a resonant frequency to the apparatus disclosed by Petersen et al. in order to achieve optimal result.

7. Claims 1, 2, 5, 9, 11, 13, 14, 18, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen et al. U.S. Patent 4,314,365 in view of Taniguchi et al. U.S. Patent 5,675,325.

Regarding claim 1, similarly as claim 23, Petersen et al. teaches an acoustic telemetry apparatus for transmitting signals from a first location within a well borehole to a second location, comprising:

- An elongated member having a longitudinal bore (Figure 4);
- A reaction mass (Figure 7, unit 232 and column 8 lines 8-26) moveably disposed on the elongated member; and
- An actuator (Figure 7, unit 234) coupled to the elongated member and the reaction mass, the actuator actuated to induce an axial reciprocating movement of reaction mass relative to the elongated tube, whereby the reciprocating movement causes an acoustic wave to transmit into the elongated member, the acoustic wave being indicative of the signal (column 8 lines 8-26).

However, Petersen et al. does not specifically teach that the actuator coupled to the elongated member and the reaction mass at the location **within the well borehole**.

Taniguchi et al. also teaches an acoustic information transmitting apparatus, wherein the acoustic transmitter is positioned within the well borehole to transmit acoustic signals along the tube body (Figure 7 and column 7 lines 6-23).

Taniguchi et al.'s teaching shows that it has been common to provide an acoustic transmitter positioned within the well borehole in order to transmit acoustic signals up and down the borehole. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the acoustic transmitting

apparatus disclosed by Petersen et al. so that said acoustic transmitting apparatus can be positioned within the well borehole, as suggested by Taniguchi et al.

Regarding claim 2, Petersen et al. also suggests a controller for controlling the apparatus (column 8 lines 26-38).

Regarding claim 5, Petersen et al. also teaches a production tube (Figure 2, unit 40).

Regarding claim 9, Petersen et al. also teaches the apparatus claimed in claim 9, wherein the actuator (Figure 7, unit 234) is coupled to the reaction mass (Figure 7, unit 232) with a biasing element (Figure 7, unit 238).

Regarding claim 11, Petersen et al. also teaches that the reciprocating movement is an oscillation at a predetermined frequency (column 10 lines 5-7).

Regarding claim 13, , the actuator disclosed by Petersen et al. is also a fluid control device (column 8 lines 27-38).

Regarding claim 14, the fluid control device disclosed by Petersen et al. is also a fast operating valve (column 8 lines 27-38).

Regarding claim 18, the fluid control device disclosed by Petersen et al. is also a variable flow restrictor (column 8 lines 27-38).

Regarding claims 21 and 22, the first passageway (Figure 4) disclosed by Petersen et al. is also a substantially annular space between the reaction mass and the elongated member and extending at least partially along the length of the reaction mass (Figure 4, unit 232). Said passageway is also a central bore extending through the reaction mass (Figure 4).

8. Claims 10, 15-17, 19, 20, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen et al. U.S. Patent 4,314,365 in view of Silverman U.S. Patent 3,934,673.

Regarding claims 32 and 33, Petersen et al. teaches an acoustic telemetry apparatus including a valve, however, Petersen et al. does not teaches that said valve is a rotating valve. However, One skilled in the art would recognize that rotating valve has been commonly used in such hydraulic system, as evidenced by Silverman.

Silverman also teaches an acoustic telemetry apparatus, wherein a rotating valve is utilized to control a hydraulic system, wherein said rotating valve is driven by a motor (column 5 lines 54-67), and wherein said motor is a synchronous motor (column 4 lines 55-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a rotating valve controlled by a synchronous motor to the apparatus disclosed by Petersen et al., as evidenced by Silverman, in order to synchronously control the hydraulic system disclosed by Petersen et al.

Regarding claim 10, Petersen et al. teaches the apparatus as claimed in claim 10, except wherein the biasing element is at least one spring element.

Silveman, in the same field of endeavor, teaches a spring element as a biasing element (column 5 lines 54-67) connecting to the actuator.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a spring as a biasing element coupled to the

actuator of the apparatus disclosed by Petersen et al., as evidenced by Silverman, in order to resiliently actuate said actuator against the reaction mass.

Regarding claims 15-17, as mentioned above, Petersen et al. teaches an acoustic telemetry apparatus including a valve as claimed in claim 15, however, Petersen et al. does not teaches that said valve is a rotating valve. One skilled in the art would recognize that rotating valve has been commonly used in such hydraulic system, as evidenced by Silverman. Silverman also teaches an acoustic telemetry apparatus, wherein a rotating valve is utilized to control a hydraulic system, wherein said rotating valve is driven by a motor (column 5 lines 54-67), and wherein said motor is a synchronous motor (column 4 lines 55-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a rotating valve controlled by a synchronous motor to the apparatus disclosed by Petersen et al., as evidenced by Silverman, in order to synchronously control the hydraulic system disclosed by Petersen et al.

Regarding claims 19 and 20, poppet valve and pilot valve have been commonly known and used in hydraulic systems to control fluid movement. Therefore, by conventionality, it would have been obvious to apply poppet and pilot valves to the apparatus disclosed by Petersen et al.

9. Claims 3, 4, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen et al. U.S. Patent 4,314,365 in view of Bedenbender et al. U.S. Patent 4,519,053.

Regarding claims 3 and 25, Petersen et al. teaches an acoustic telemetry apparatus as claimed in claim 3, except teaching a displacement sensor for sensing a position of the reaction mass relative to the elongated member.

Bedenbender et al., in the same field of endeavor, teaches an acoustic telemetry apparatus, which includes a displacement sensor for sensing a position of the reaction mass (Figure 2, unit 88) relative to the elongated member (column 7, lines 56-67 and Figures 2 and 8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a displacement sensor for sensing a position of the reaction mass (Figure 2, unit 88) relative to the elongated member of the apparatus disclosed by Petersen et al., as evidenced by Bedenbender et al., in order to subsequently control the actuator.

Regarding claims 4 and 26, Bedenbender et al. also teaches a controller (Figure 8 unit 142), a displacement sensor and a feedback loop (Figure 8 unit 136) connected to the sensor and controller for conveying an output of the displacement sensor to the controller, the conveyed output at least partially determinative of controller actions in controlling the actuator (column 7, lines 56-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a displacement sensor and a feedback loop connected to the sensor and controller to the apparatus disclosed by Petersen et al., as evidenced by Bedenbender et al., in order to control the actuator.

10. Claims 6-8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen et al. U.S. Patent 4,314,365 in view of Paulsson U.S. Patent 4,715,470.

Regarding claims 6 and 7, as mentioned above, Petersen et al. teaches an acoustic telemetry apparatus as claimed in claims 6 and 7, except wherein the actuator is an electromagnetic device.

Paulsson, in the same field of endeavor, teaches an acoustic telemetry apparatus, wherein the actuator is a linear electromagnetic device (column 3 lines 2047 unit 30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a linear electromagnetic actuator coupled to the reaction mass and to the elongated tube of the apparatus disclosed by Petersen et al., as evidenced by Paulsson, to actuate the reaction mass in order to generate a data signal.

Regarding claim 8, Paulsson also teaches at least two electromagnetic devices, wherein the first electromagnetic device (column 4 lines 2942 and Figure 3 units 130 and 230) being coupled to the reaction mass at a third location and the second electromagnetic device being coupled to the reaction mass at a fourth location spaced apart from the third location.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide at least two electromagnetic actuators to the

apparatus disclosed by Petersen et al., as evidenced by Paulsson, in order to actuate said reaction mass.

Regarding claim 12, even though Petersen et al. does not specifically teach that the reciprocating movement is an oscillation at a resonant frequency, however, one skilled in the art would recognize that wave oscillates best at resonant frequency. Therefore, it would have been obvious to provide reciprocating movement at a resonant frequency to the apparatus disclosed by Petersen et al. in order to achieve optimal result.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Dang whose telephone number is 703-305-1836. The examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik, can be reached on (703) 305-4704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Hung Dang
3/17/2004
H.D.

HD

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